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ABSTRACT

A study of the use of four tutorials written in Cicero authoring language for a second level Open University course, "Biological Bases of Behaviour," focuses on why students do or do not use computer assisted learning (CAL) tutorials and students' and tutors' beliefs about the educational utility and practicality of CAL tutorials. Data gathering methods included mailed student questionnaires, letters sent to tutors, spontaneous sources such as student letters, integration of evaluation questions into the teaching materials, and in-depth interviewing of students who had not used the system. Results indicate that student use of the Cicero tutorial system was relatively low, with time given as the major reason for non-use and for dropping out. While Cicero was perceived to be beneficial, the gains did not outweigh the disadvantages. The most potent factors in system use were related not to its perceived educational benefits, but to such practical problems as students' prior negative computer experiences, fear of using the terminal, and embarrassment at using it in front of other students. Data gathering instruments, data tables, detailed study results, and an eight-item reference list are provided. (LMM)

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An evaluation of tutorial CAL at the Open University: the use of Cicero in SDT286

Ann Jones and Tim O'Shea

CAL Research Group Technical Report No.5

IR011237

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An evaluation study of tutorial CAL at the Open University: the use of Cicero in SDT286.

(This study was carried out in 1979)

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Contents

A) Background

B) Aims of the evaluation study

C) Summary of results

D) The evaluation study

E) The Cicero system in use

F) Conclusion and recommendations

G) List of tables and figures

H) List of appendices

Abstract

This report describes an evaluation study of the use of a computer assisted tutorial system, Cicero, in an Open University second level course "Biological Bases of Behaviour" (SDT286).

The main conclusion is that the use of Cicero did not relate to the perceived educational benefit, but to practical problems related to its use and also to anxieties about using computers.

Recommendations are made to alleviate these problems at the University.

Acknowledgements

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A. Background

This report assumes reasonable familiarity with the Open University and its organisation. Bramer (1980) describes the university and the role of CAL in the OU in some detail.

The CAL system discussed here (CICERO) was designed to provide students with additional feedback, diagnostic assessment and remedial help: additional, that is, to tutorial provision and TMA feedback.

In SDT286 (Biological Bases of Behaviour), 4 Cicero tutorials, written in the Cicero authoring language (developed at the Open University), replace 4 CMAs. Tutorials can be accessed from any study centre with a terminal, and are therefore theoretically available whenever the study centre is open, although use of the terminals is quite high and students are advised to book terminals.

For each tutorial, a set of "profile questions" relating to a specific block of the course is sent to students to answer at home: the answers to these diagnostic questions provide information about students' conceptual strengths and weaknesses related to specific objectives of the block and course.

The completed answer form is taken to the study centre, the program accessed and the answers typed in. Further questions may be asked to verify the diagnosis made, and, according to the students' answers, advice and remedial help is given.

In interactive format then, the system offers the student a means of evaluating his or her understanding and further assistance if required.

For the student unable to get to the terminal, a 'postal' version is available; which provides diagnostic advice based on the answers to the profile questions but cannot, of course, enter into further dialogue. To use this alternative the student posts the answer form and receives a printout within a few days.

B. Aims of the evaluation study

We wished to find out why students do or do not use CAL tutorials and the beliefs that they and their tutors hold about the educational utility and practicality of CAL tutorials. Currently CAL is an expensive resource to provide and its use makes severe practical demands on our students. We felt that it was important to obtain information about patterns of use and beliefs with respect to CAL as this information is crucial in helping course teams to estimate take-up for planned CAL provision. Our strategy has been to concentrate on the CAL component of one particular course and obtain information from students, tutors and records of computer use. Some of our tactics are usual for an educational evaluation, but among the more novel tactics was the integration of evaluation questions into the teaching material and the in-depth interviewing of students who had not used the system. We did not attempt to establish the educational effectiveness of CAL tutorials. This is because we believe that this general question would make as little sense as 'are correspondence units educationally effective?' It is a question that could make sense in the context of a CAL tutorial integrated into a particular course but at present it is more important to establish if (and why), student would use CAL tutorials if provided.

C. Summary of results

1. Take up was relatively low - not more than 37% of the students enrolled in the course used CICERO once or more (see Appendix 1). Those who did use Cicero tended to use it interactively and had little stamina - one third getting no further than the first tutorial, less than one fifth using all four.

2. Time was the major reason given for not using Cicero and for dropping out - the typical O.U. student is over-committed and will not do anything which is not essential (i.e. assessed) unless the benefits very clearly outweigh the time used. While Cicero was perceived to be beneficial the gains were not sufficiently great to outweigh the disadvantages.

3. The most potent factors in using such a system are totally unrelated to its educational benefits. Leaving aside the considerations mentioned above, in 2, a sizeable proportion of students had bad computer experiences, were scared of using the terminal, and were embarrassed at using it in front of other students.

D. The evaluation study

1. Methodology

A variety of methods were used to assess the perceived benefits of Cicero, and the reasons given for using or not using it:

i) An initial questionnaire was sent to all students: assessing intended use, expected benefits and disadvantages and attitudes towards the system

ii) Questionnaires were sent with answers to postal tutorials and built into interactive tutorials - see fig. 1.

iii) Students and staff were interviewed at a residential summer school

iv) Final questionnaires were sent to students to follow-up answers to earlier open-ended questions

v) Questionnaires were sent to tutors.

'Spontaneous' sources, such as letters received from students were also used.

2. Patterns of Use

Usage figures were available from SCS and could be compared with estimates from the survey.

3. Other sources included Audio Visual Media Research Group reports, and articles in Teaching at a Distance.

Results

1. Expectations and intentions

A questionnaire was sent to students before they used any of the tutorials.

Table 1

Intentions of use

Intend to use Cicero at study centre	58%
Intend to use Cicero postally	11%
Undecided	25%
Don't intend to use	6%

N = 432 (38% response rate)

Table 2

Perceived advantages and disadvantages of Cicero : not prompted in terms of specific points

Advantages		Disadvantages	
Finding and correcting weak points	23%	Snags	
Self-assessment	25%	Terminals overbooked	29%
Feedback	26%	Inconvenient times	
Additional help	22%	Uncertainty about mastering instructions	
Practise using terminal	14%		
Revision	12%	Typing	21%
Consolidates understanding and clarifies main parts	11%	Logging in	
		Travelling time	
Better than CMA comments - an individual source	11%	Booking	15%
		Not enough time	13%
		Machine breakdown, mechanical annoyances, limitations of being a machine	10%

N = 432

(Categories not mutually exclusive)

These two tables reflect a marked preference for interactive use - and a realistic appraisal of the aims of Cicero and its associated problems. A full list is given in appendix 2a.

Prompted disadvantages included:

"I'm put off by the thought of dealing with a computer (12%)

"I'm daunted by the complicated descriptions of Cicero in the course material (11%)

"I dislike using typewriter keyboards" (4%).

Table 3

Previous Experience related to "Anxiety"

Used terminal before	52%	Find prospect daunting (of experienced users)	9%
Haven't used terminal before	48%	Find prospect daunting (of non-users)	40%

N = 432

52% of our sample had used a terminal before, and although that use may have been minimal, only 9% of these students found the prospect of reading the documentation and learning how to use the system daunting, as opposed to 40% of inexperienced users. Clearly the novices believe they are disadvantaged in this respect which is important, as 40% of our inexperienced users are prepared to admit to some anxiety.

Many students, however, felt that acquiring some computing skills, (even if only operating a terminal) was a worthwhile and relevant goal:

> "This is my opportunity to use a computer for the first time as such. I am going to ensure that the chance doesn't escape me".

The same student saw as a benefit:

"The insight of how a computer works"...

A comment from an inexperienced intending user, perhaps sums it up:

"I am put off and daunted by the thought of using a computer but am very keen to find out more about it".

Students' beliefs concerning the likely problems of using such a system are realistic; (centering around time, travel and booking difficulties) and more specific instances often arise from personal previous experience or hearsay.

E. The System in Use

The four SDT286 tutorials are associated with:

Units 3 and 4	(Invertebrate nervous systems and behaviour and vertebrate nervous systems and locomotory patterns)
Unit 9	(Emotion - its Physiology and Psychology)
Unit 12	(Learning)
Unit 15	(Social Behaviour of Animals)

Students can use the Cicero tutorials at any point in the course but are encouraged to do so at the point where they have just finished studying the related course material.

Although many students do use the tutorials when they have been studying the appropriate blocks, some students use the tutorials towards the end of the course for revision.

So that we could get information relating to specific Cicero tutorials from students at the time they used them, we added questionnaires on to the end of each tutorial, so that every student who completed a tutorial was asked questions related to it.

The obvious advantage of this method is its immediacy: students were able to give their comments at the time of doing the tutorial rather than trying to recall how they reacted some time later.

This immediacy could not be captured in the case of postal users - but they were sent questionnaires with the diagnostic feedback returned to them on receipt of their completed answer forms. Turn round is usually quite fast, - typically 3-5 days.

Fig. 1 shows the timetable of use of Cicero and of the evaluation.

Figure 1: Timetable of the Evaluation

	Students use of Cicero	Evaluation study timetable	
January			
February		Initial questionnaire sent to all students	①
March	Study Units 3 & 4	Questionnaire sent to tutors	②
	* 1st Cicero tutorial	Questionnaire built into tutorial and sent with answers to postal version	③
April			
May			
June	Study Unit 9		
	* 2nd Cicero tutorial	Questionnaire built into tutorial and sent with answers to postal version	④
July			
August	Study Unit 12		
	* 3rd Cicero tutorial	Questionnaire built into tutorial and sent with answers to postal version	⑤
		Interviews at summer school	⑥
September	Study Unit 15		
	* 4th Cicero tutorial	Questionnaire built into tutorial and sent with answers to postal version	⑦
October		Final questionnaire sent to all students	⑧

Explanation of figure 1 (timetable chart)

1. The initial questionnaire was sent to all students.

2. A questionnaire was sent to 37 tutors.

3,4,5,7. Questionnaires were built into the Cicero tutorials, so that students answered them at the end of the tutorial. For the postal version, they were sent to the student with the postal feedback. Thus, only students who completed the tutorials either interactively or postally filled these in.

6. 53 students were interviewed at summer school; these were users and non-users.

8. A final questionnaire following up information from the others and from the interviews was sent to all students

* Students are recommended to use the tutorials after studying the relevant unit(s), but the tutorials remain available all year, so the dates given represent the earliest likely use.

1. No. of users

1150 students were finally registered but we don't know how many of these were 'live' during the course.

250 students intended to use Cicero; and 199 actually did use it in some way: 37% of the respondents to the questionnaire.

Table 4

Numbers of students who used each tutorial (Source: SCS)

	Interactive	Postal
Tutorial 1	96	93
2	5[illegible]	71
3	29	60
4	14	40

It is difficult to know what percentage these figures reflect, as we don't know how many students are "live" when each tutorial is used. Neither do we have any way, from these figures, of knowing whether the same students are using different tutorials.

From the survey, though, we see that 199 students have made some use of the system; this is 37% of our respondents and 17.6% of the finally registered number of students.

Of these,

24% used tutorial 1 interactively, only

9% used tutorials 1 and 2 interactively

6% used tutorials 1,2 and 3 interactively

6% used all 4

We see a decline and levelling off. Presumably, our respondents over represent interactive users as the SCS figures are (for the four interactive tutorials) 96, 52, 29, 14.

Postal use

Of our respondents, 2% of users did the first tutorial interactively and the rest postally; 9% of users did all the tutorials postally (N=18); 7% used 1,2 and 3.

However, it may be that postal users are under represented in our sample whilst for the first tutorial there are more interactive users (96:93), thereafter there are more postal users. The final tutorial has 40:14 postal to interactive students.

To summarise then:

(i) Usage is fairly low. 8.4% of the final reg. no. of students used the first tutorial (same for postal) after which numbers decline for each but much more so interactively. Of the sample surveyed 37% had made some use of Cicero. We can compare this with the 58% of our respondents who 'intended' to use the system.

(80% students SDT286 in 1976 attended at least one tutorial).

(ii) Looking at both the SCS figures and those who filled in our questionnaire together it looks as if people do not switch to using the postal system. But postal users seem to be more persistent. They may comprise a different population.

Two-thirds of those who used the first tutorial postally said they would have preferred to have used the interactive version. Of the 44 students who did the first interactive tutorial and answered our questions, 41 said they enjoyed the tutorial.

2. Interactive users vs Postal users

Problems

One-third of our interactive users (1st tutorial) had logging-in problems. About a quarter of the interactive users took a lot longer than everyone else (80-90 minutes as opposed to 1 hour or less). Of these, those who went on to do the other tutorials had little subsequent difficulty; we should bear in mind, however, the possibility that many of these early users were frightened off for good.

Enjoyment

One of the notable differences between postal and interactive users was that interactive users commented that they found it enjoyable; postal users found the tutorial useful and helpful but did not say they enjoyed it.
Possibly the barrier which protects postal users from the hassles of computing by doing it by post also insulates people from the enjoyment of communicating 'directly' with the machine.

Anthropomorphism

Among commonly held (but unsubstantiated?) beliefs concerning people's attitudes towards computers are that people resent or dislike anthropomorphism; dislike the idea of communicating with a machine and in some instances attribute it with 'intelligence'.

Table 5

Anthropomorphism

	Postal	Interactive
1. I would rather be told I'm wrong by a computer than by a tutor	18%	29%
2. I enjoy the anonymity of the computer	45%	62.5%
3. I dislike the anonymity of the computer	18%	12.5%
4. I dislike it when the computer adopts a chatty human style	18%	16.6%
	N=22	N=48

(The percentage of students who agreed with the above statements, - categories are not mutually exclusive)

A majority of students enjoyed the anonymity; a sizeable proportion, especially of interactive users, felt they would rather be told they were wrong by a computer than by a tutor.

Table 6

Quality of Feedback

	Postal	Interactive
Boring	-	-
Patronising	-	-
Jargon-laden	-	-
Simple	-	29%
Concise	59%	37%
Wordy	-	
Useful	64%	79%
Repetitive		
Formal		
(Other figures were too low for inclusion)	N=17	N=24

Frequency of answers to question:

Do any of the following adjectives apply to the quality of feedback in this tutorial?

In comments, emphasis was given on the value of such an exercise for revision

3. Tutors views

The questionnaire sent to tutors elicited 37 responses (see appendices 7 and 7b).

We were interested in what type of student tutors thought Cicero was aimed at. 68% of tutors said they would advise ALL students to use Cicero. After that there was little agreement;

whilst many tutors thought it would benefit weaker students some saw it as only applicable to the more successful students.

Table 7a

Tutors' attitudes about Cicero's strong and weak points

Strong points	%	Weak points	%
immediate feedback	46	too rigid	19
self-pacing	14	travel	8
self-assessment	11	students afraid of using computer	8
a fresh learning situation	8	access	8
embarrassed students can use	8	slow	8

Table 7b

Other responses too infrequent to include were:

Strong points	Weak points
Good exposure of individual misconceptions	Students believe they are assessed
Easy to use	The content is: too limited, too specific, sometimes faulty, deals with facts not arguments
Continuous access reassurance flexibility	Takes time to learn to use
Range of questions	Takes time generally
Students enjoy it	Too much paper
Revision	Poor ratio of effort to returns
Interaction	

There is wide variance in the perception of such a system's strengths and weaknesses. The system is praised for its flexibility, range of questions, continuous access, etc., and criticised for its rigidity, for being too limited and difficulty of access.

Table 8

How students were advised to use the Cicero system.

Interactively only	14 (38%)
By post only	0
Either interactively or by post	19 (51%
Neither	4
Other	1

Responses to the question:
"How do you advise students to use the Cicero system?"
(Note that nobody advised their students to use the postal services only - even though this is less time-consuming and time is the major reason given for not using the system).
Estimations of use:

5 tutors thought most of their students used Cicero

9 tutors thought about half of their students used Cicero

4 tutors thought about a third of their students used Cicero

8 tutors thought very few of their students used Cicero

But the biggest proportion, 10, didn't know whether or not their students used it. 11 tutors however said they used Cicero in some way in their tutorials; the sorts of uses being:

'Discussion', 'check on grasp', 'talks', 'as a reminder', 'relate to tutorials', 'in conjunction with CMAs', 'revision', 'initial briefing', 'to expose particular theoretical difficulties'.

Finally, we asked tutors what they believed to be the prevailing attitude among tutors to Cicero. There was little agreement. Comments ranged from: "unfavourable" (2) through "positive but cautious" to "students find it useful".

Interviews

Although the response rate from questionnaires was quite high, we were only getting information from those who had used the system. The questions that remained uppermost was: What reasons do non-users have for not using it? (Remember that 47% of our respondents intended to use it.) Why do people stop using Cicero? After all, users reported that it did indeed provide them with the feedback they'd expected.

The aim of the summer school exercise was to try to answer these questions.

53 students were interviewed: one of the interviewers was tutoring at the summer school, the other was visiting for this purpose. There is a danger in interviewing of responses being given which 'please' the interviewer; we believe that we have avoided this trap, as having entered discussion, those students who felt very negative about Cicero were very keen to explain why! (And the reverse was also true).

Many of the students interviewed had not used Cicero (and often not answered the questionnaires either). They cued us to three factors:

1. Bad computer experiences and embarrassment
2. Fear of secret assessment

and 3. an instrumental approach to OU study which can ignore anything not seen as essential.

Attitudes of students interviewed at summer school can be listed:

1. An approach to study determined largely by assignments. (Given the nature of fitting in studying for a degree with work and other comitments, we should not find this surprising. However, in this respect OU students may be atypical of undergraduates generally.)
2. Cicero is seen as a better system to replace CMAs.
* 3. A belief in assessment.
4. A desire for a sympathetic personal introduction to the terminal.
5. A very positive attitude to the availability of different modes of learning.
* 6. Embarrassment at using the terminal and making mistakes in front of other students.
* 7. Fear of computers.

The positive aspects which emerged, were similar to those reported by users in the questionnaire, but for many of these students the disadvantages which they perceived outweighed

* taken up in the final questionnaire

these likely benefits.

The picture that emerged from the summer school study was that some people at least were very frightened and embarrassed by the idea of using a computer.

The final questionnaire

We investigated these issues, especially (3), (6) and (7) above in a questionnaire sent to all students at the end of the year (see appendix 8). 543 replies were received.

Table 9

Negative factors in using computers (**N = 100, *N = 543)

'Bad' computer experiences (Q4 - see appendix 8)	23% **
Scared of using the terminal (7(a))	12%*
Embarrassed at using it in front of other students (7(b))	13%*

* Both these figures may underrepresent the situation as they only include those students who report strong agreement with the statement.

The "bad computer experiences" encompassed a range of problems: A selection of reports if given in appendix
One student reported:

> "Computers breaking down, students not 'booking' time on the computers, but expecting, nevertheless to encroach upon other students' 'booked' time and, probably most

of all on the SDT286 course, the sheer length of the computer tutorials. They seem to go on for ever".

And another's comment is Dickensian in flavour:

"I can use a computer properly and have done M101 with the only purpose of not having any trouble with the Maths associated with Science courses. But I had to cope with a computer terminal often with missing knobs, and once had to draw near the door and work in the feeble light of the corridor as the light had gone out in the room. Also the computer terminal is often overbooked or booked regularly one evening a week for Technology students when it's the only evening I could really go (I work 3 evenings a week)".

A comment from another student, indicating the importance of a personal, sympathetic introduction to the terminal:

"The only time I used Cicero was at Summer School when there was a terminal on the site and another student to show me how to work it! Even here there were difficulties in gaining access and the computer had a most annoying habit of closing down on one in the middle. However, I did manage to get one complete run through of the 1st tutorial and felt it was worth while and really tested me out with the additional questions as well. Parts I thought I knew, I found I didn't, which was useful to know. I wish there weren't so many

hazards involved in making use of it, though having had some experience now, another year I would make more effort at least to use the postal service".

And a final quotation:

"More should be done to alleviate the real fears of some students of using the computer terminals. Perhaps tutors/tutor counsellors could be made more aware of this".

The 'bad computer experiences' can be classified as follows:

Table 10

"Bad computer experiences"

	Type of Problem	Number of reported instances *
1	Logging in difficulties Getting into program	36 9
2	Difficulty in booking the terminal/general booking problems	31
3	Computer malfunctioning/ terminal broken	27
4	Computer over-booked	25
5	Time, generally	25
6	Getting out of program/ stopping the computer	19
7	Administrative hassles, college closed, caretaker not around	17
8	Induction session off-putting, tutor could not use the system	14
9	Heard of problems from other people	14
10	Bad telephone line/line engaged	13

It is often very difficult to categorise these, especially where inexperienced users have problems operating and probably do not themselves distinguish between, for example, a malfunctioning terminal and the machine being down.

* This classification is a breakdown of the different types of problem, not mutually exhaustive, from the total number of reported problems (169).

The list in table 10 is based on answers to question 10:

"Students who don't use Cicero often quote a frustrating or annoying past experience with a computer as their reason for not using Cicero. Can you cite any examples of this that have happened to you or other students?"

We also investigated the attrition rate:

Table 11

Reasons given for attrition

	No. responses
Too time consuming/pressure of workload	33
Not assessed - not essential, and therefore dropped when pushed	9
Inconvenient - booking, travelling, etc.	6
Very little feedback for lot of effort	5
Technical difficulties with computer	4
Not particularly helpful	3
Felt inadequate/did badly	3

...many students who use Cicero early on in the course do not make use of all the Cicero tutorials. Why do you think this is? (Q8)

Another question remained unanswered, if 'time' was the key factor, why didn't people use the postal version which only required the time to answer the questions and go through the feedback?

Table 12

Reasons given for not using Cicero at all

Pressures of OU work/lack of time	27
Pressures of domestic life leaving no time	10
Workload too high to include non-essential work	11
*Inconvenient/expensive/time consuming journey to terminal	8
Postal journey destroyed the essence of Cicero - its immediate deedback aspect	10
Forgot/never got round to it/easy to ignore	8
Not worth the time spent	2
Not aware at the time of the postal version	5

Number of responses to the question "If you didn't use Cicero at all, why was this, bearing in mind that the postal version of Cicero only takes about 45 minutes to complete?" (Q8 - See appendix 8)

* It seems likely that these students either didn't understand the question or weren't aware of how the postal service worked.

Table 13

Intentions to use Cicero in the future:

Yes, definitely	16%
probably	21%
possibly	34%
hard to say	23%
No, definitely	6%

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Given the discrepancy between intentions and reality, it is unlikely that the students answering 'maybe' will in fact use it.

Those who thought they would or might use it in future were asked in what way they thought it would help their future studies:

Table 14

How Cicero is expected to help students' future studies (N = 543)

		%
1.	In discovering/defining weak areas (feedback)	25
2.	Checking level of comprehension, showing up strengths and weaknesses, self-assessment (knowing yourself)	16
3.	Consolidate learning/knowledge. Aid to memory (reinforcement)	14
4.	Means of revision/indicate areas needing revision (revision)	
5.	Clear up misconceptions, remedial. Clarify difficult concepts (clarify)	9
6.	Extra tuition - guidance. Additional style of learning (tuition)	8
7.	Quicker, better than CMAs (CMA)	5
8.	Analyse data, maths. problem. Cognitive Psychology modelling (data manipulation)	2

This is very similar to the expectations students set out with (see table 2), where around 25% of students emphasised feedback, self-assessment, funding and correcting weak points.

Table 15

The sorts of students who would gain particular benefit from using Cicero. (N = 543)

		%
1.	Live far from study centres/no tutorials available	12
2.	Needing reinforcement/feedback. In difficulty. With bad tutor	11
3.	No students	10
4.	All students	7
5.	Don't know	6

Other responses less frequent than 6%

These responses indicate the diversity of opinion among students. The very factor which has been cited as a disadvantage - having to go to a study centre a long way away (see table 2) is given as a major reason for using it!

Again, 7% think its beneficial for all students but 10% think it benefits none! The second point: "those needing reinforcement/ feedback - in difficulty/with bad tutor" probably most nearly reflects opinion.

It is clear that educational benefits have little to do with the use of a system like Cicero in its present form. We argue that for many people, even the most rewarding and beneficial experience CAL could provide - is not sufficient to make the time and effort worthwhile. Conversely, if the system were easily accessible most people would try it out (See table 16) - and possibly then, its quality might matter.

Table 16

Use of Cicero if a home terminal were provided (N = 543)

	%
Yes	76
probably	11
possibly	6
No	7
Can't say, don't know	1

Answers to question

"Would you use Cicero if provided with a home terminal?"

F. Conclusions and recommendations

1. Trade-off (between perceived value of Cicero and practical difficulties of use).

The major finding is that the use of Cicero by SDT286 students did not relate to the educational benefit they perceived from using it.

Take-up is generally low, and this is related to a cluster of factors, difficult to disentangle, which include the time to use it and the problems of doing so.

Students are realistic about what the system can provide, and on the whole, what the students thought they gained from using the system matched their expectations. However, the value of Cicero use is traded against the amount of energy needed; and thus a small amount of extra 'hassle' can discourage a future user for good. Unfortunately, in the Open University, the amount of effort needed to use this system is quite considerable, including:

reading the documentation, thinking about and answering the questions, filling in the form, booking a terminal, travelling to it - and for the first time user, learning to use the system.

Recommendation 1: The only way to make a substantial increase in CAL tutorial take-up would be to radically change the delivery system. The ideal change would be the provision of home terminals or home microcomputers.

2. Novices' fears

For the novice, using a computer may set up an "approach/avoidance" conflict where the student is keen to use the system but anxious to find out more about computers but embarrassed at learning to do so in front of others.

For things to go well for the inexperienced user, a personal and sympathetic introduction is needed. Our evidence is that the fear does go away, but if the first introduction to the computer is badly handled, the effect will be long-lived. A sympathetic, friendly introduction is the best approach but no induction is better than a bad induction. The first computer experience should be successful. A bad experience sours more than one person - as that person will tell his or her friends all about it.

Recommendation 2: To reach the students who are fearful of computers requires both well-organised induction meetings which are comptently run, and a system which is user-friendly.

3. Postal versus Interactive

More students used the interactive mode than the postal mode which was not viewed as a good alternative, lacking the 'immediacy' of the interactive system.

Also, students enjoyed the interactive tutorials but did not describe the postal tutorials in such terms.

Recommendation 3: Postal tutorial CAL should not be offered as an alternative to good, interactive, dialogue based tutorials. But it may have a useful role to play as a CMA-type exercise which provides feedback.

4. CAL versus Tutorials

It is possible that those people who do use and enjoy the CAL tutorials do not enjoy traditional face to face tuition, but actively seek out the anonymity fo the computer.

Recommendation 4: A study should be carried out to establish what proportion of the students who do not attend tutorials might benefit from CAL tutorial provision.

5. Tutors' views

Tutors' attitudes can perhaps best be described as benign tolerance. Cicero is not seen to be integrated into the course by either students or tutors, but as an add-on option. This view decreases its likelihood of success.

Recommendation 5: CAL tutorials should be properly integrated into distance learning courses. At a minimum they should attract the same level of course team discussion and quality control as television programmes.

G. List of tables and figures

		Page No.
Table 1	Intentions of use	5
2	Perceived advantages and disadvantages of Cicero	6
3	Previous experience related to "Anxiety"	7
4	Number of students who used each tutorial	12
5	Anthropomorphism	15
6	Quality of feedback	16
7a, 7b	Tutors attitudes about Cicero's strong and weak points	17
8	How students were advised to use the Cicero system by tutors.	18
9	Negative factors in using computers	21
10	"Bad computer experiences"	24
11	Reasons given for attrition	25
12	Reasons given for not using Cicero at all	26
13	Intentions to use Cicero in the future	26
14	How Cicero is expected to help students' future studies	27
15	The sorts of students who would gain particular benefit from Cicero.	28
16	Use of Cicero if a home terminal were provided	29
Figure 1		
Timetable of evaluation		10

H. List of appendices

Appendix 1	Summary of the use of Cicero in SDT286 in 1979
2	The initial questionnaire
2a	Preliminary report of attitudes and intention of using Cicero
3a	Questions built into 1st tutorial
3b	Questionnaire relating to 1st postal tutorial
3c	Analysis of student responses to 3b
3d	Summary of answers to the 4 built-in questionnaires: 3a, 4a, 5a, 6a
4a	Questions built into 2nd tutorial
4b	Questions relating to 2nd postal tutorial
4c	Summary of replies to 4b
5a	Questions built into 3rd tutorial
5b	Questions relating to 3rd postal tutorial
5c	Summary of replies to 5b
6a	Questions built into 4th tutorial
6b	Questions relating to 4th postal tutorial
6c	Summary of replies to 6b
7	Letter sent to tutors
7a	Tutor report form
7b	Summary of tutor replies
8	Final questionnaire sent to students

APPENDIX 1 Summary of use of Cicero in SDT286 in 1979

Response rate

About 60%. Hard to determine as we don't know for certain how many were 'live' at the time when the computer provided the labels. To be accurate, the response rate is between 48% - 66% and is likely to be much nearer the upper than the lower figure. It could in fact be 65% or 66%.

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Usage of CICERO on SDT286

We heard from 543 students.

37% had used CICERO on SDT286 at all
67% had not used CICERO on SDT286 at all.

I would guess that the take-up was even less than 37%, on the grounds that people who hadn't used CICERO on the course would have been less likely than users to respond to a CICERO questionnaire, however strong the persuasion. I give percentages below on both the total base (543) and on the base of those who used CICERO at all on SDT286 in 1979 (199). Thus the second column below should be the more useful as it is probably a more accurate reflection of reality.

Most frequent patterns (each of the following excludes all the others)

	Total respondents (N = 543)	Only those respondent who used CICERO at (N = 199
	%	%
Used tutorial No 1 only, interactively only	9	24
Used tutorials Nos 1 and 2 only, interactively only	3	9
Used all four postal tutorials (didn't use interactively at all)	3	9
Used tutorial No. 1 only, postally only	3	9
Used tutorials Nos 1 and 2 only, postally only	3	8
Used tutorials Nos 1, 2 and 3 only, postally only	2	7
Used tutorials nos 1, 2 and 3 only, interactively only	2	6
Used all four interactive tutorials (didn't use postally at all)	2	6
Used only tutorial No 1 and did it both interactively and postally	1	4
Used tutorial No 2 only and only did it interactively	1	3
Used tutorial Nos 1, 2 and 4 only, postally only	1	2
" " No. 1 interactively only & Nos 2,3,4 postally only	1	2
Used tutorials Nos 1 and 3 only, interactively only	0	1
Used tutorials Nos 1 and 3 only, postally only	0	1
Used tutorials Nos 1 and 2 interactively only and 3 and 4 postally only	0	1
Used tutorials Nos 1 and 2 only, both of them both interactively and postally	0	1
Used all four tutorials and did each one both interactively and postally	0	1
Other	2	6

Other statistics (non-exclusive)

Used any SDT286 tutorial interactively	23	64	
Used any SDT286 tutorial postally	19	51	
Used interactive mode only	18	48	} =
Used postal mode only	13	36	} =
Used both interactive and postal modes with no duplication	2	6	} 100
Used both interactive and postal modes with any duplication*	4	10	}

* Mostly/entirely due to failure to complete tutorial interactively ("it took 25 minutes to get through") and going on to do the same tutorial postally.

Summary

1. There was relatively low take-up of CICERO on SDT286 in 1979 (maximum 37%)

OF THOSE WHO USED CICERO AT ALL ON SDT286 (1979)

2. More students used the interactive mode than the postal mode, but interactive users had much less stamina than postal users.

3. Regardless of mode, one-third got no further than the first tutorial; most of these were interactive users. Over half got no further than the second tutorial. Less than one-fifth used all four tutorials.

4. There was little shift from the interactive to the postal mode (6%) and none in the opposite direction

5. Slightly more used all four tutorials postally only than used them interactively only.

APPENDIX 2

01 SDT 286 1 79 (1-11)

(12) 1

SDT286 BIOLOGICAL BASES OF BEHAVIOUR

Student Report Form

1. Please write in your student serial number ☐☐☐☐☐☐☐☐ (13-20)

Where codes are provided (e.g. Yes 1, No 2) please draw a ring around the code which corresponds to your answer, for example Yes (1)

(21)

2a) Do you intend to use CICERO during your study of SDT286 this year?

Yes, at my study centre	1
Yes, by post	2
Undecided	3
No	4

b) Please summarise why you have answered Question 2a) as you have.

(22) (31)
(23) (32)
(24) (33)
(25) (34)
(26) (35)
(27) (36)
(28) (37)
(29) (38)
(30) (39)

3. Please ring the codes of whichever of the following statements are true for you.

I've heard about CICERO from other students	1 (40)
I've heard about CICERO from a tutor or counsellor	1 (41)
I've heard about CICERO from SESAME	1 (42)
No study centre with computer terminal is accessible to me	1 (43)
I have no experience of using a computer terminal	1 (44)
I'm keen to try a computer terminal	1 (45)
I've used a computer terminal before	1 (46)
I'm keen to use a computer terminal again	1 (47)
I've used CICERO before	1 (48)
I'm put off by the thought of dealing with a computer	1 (49)
I'm daunted by the complicated descriptions of CICERO in the course material	1 (50)
I dislike using typewriter keyboards	1 (51)

Please write in below other statements which apply to you, in the above context.

(52)
(53)
(54)
(55)
(56)
(57)

(58)

4a) Have you made a 'study plan' for SDT286 this year?

Yes	1
No	2

b) IF YOU HAVE MADE A STUDY PLAN:

(59)

i) Does CICERO fit into your plan?

Yes	1
No	2

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IF 'YES': Please say how CICERO fits into your plan

5. What sorts of benefits would you expect to get from using CICERO? (58) (59) (60) (61) (62) (63)

6. What types of students would you expect to benefit from using CICERO? (64) (65) (66) (67) (68) (69)

7. What types of disadvantage or annoyance do you expect to be associated with CICERO use? (70) (71) (72) (73) (74) (75)

8. Have you any evidence for your answers to Questions 5, 6 and 7? If you have evidence, please summarise it here.

Evidence for answer to Q.5 (76) (77)

Evidence for answer to Q.6 (78)

Evidence for answer to Q.7 (79) (80)

PLEASE RETURN THIS COMPLETED FORM IN THE REPLY-PAID ENVELOPE TO THE 'SURVEY RESEARCH DEPARTMENT' AT WALTON HALL BY 15th MARCH, 1979.

TO/HW/JG/SRD © The Open University, 1978

APPENDIX 2a

PRELIMINARY REPORT OF FINDINGS FROM SURVEY OF SDT286 STUDENTS (1979) REGARDING THEIR ATTITUDES TO AND INTENTIONS OF USING CICERO

This report is based on responses from 432 SDT286 students. This is a good healthy number; however it is only 38% of the total finally registered population of SDT286 (1979). Reminder letters to students would have improved the response rate but were not sent due to the very heavy workload being carried by the Course Monitoring Group of SRD this year.

We would be wise to assume, then, that the responding sample is biassed, perhaps heavily biassed, in terms of students who do intend to use Cicero this year.

This first report gives the main findings based on a simple frequencies processing of the results. The next stage will be to re-process the data using specified filters and cross-tabulations.

Bob Womphrey,
Survey Research Department,
Institute of Educational Technolo
7th June, 1979.

1. Do you intend to use Cicero this year?

	%
Yes, at my study centre	58
Yes, by post	11
Undecided	25
No	6

I doubt whether the above statistics represent the reality of all SDT students' intentions this year, since a questionnaire about Cicero is virtually certain to draw a greater response from intending Cicero users than from those who do not intend to use it. The value of the question is that it provides us with a filter for subdividing responses to subsequent questions (in later stages of the processing).

2. Previous experience of terminal and Cicero

	%
I have no experience of using a computer terminal	42
I've used a computer terminal before	52
(6% did not respond to either of the above two possibilities)	
I've used Cicero before	11

3. Computer terminal availability this year (1979)

	%
No study centre with computer terminal is accessible to me	5

4. Advantages of Cicero: not prompted in terms of specific points

	%
Additional help (with hard parts, puzzling questions, important parts otherwise overlooked; a remedial programme)	26
Find and correct weaknesses. Self assessment	23
Fast(er) feedback (gives you encouragement)	23
Check understanding/progress	22
Practice using a terminal	14
For people who can't get to tutorials (NB: semi-prompted)	13
For revision (gives permanent record)	12
Consolidates understanding of material and clarifies main points	11
I can't get enough teaching	10
Better than CMA comments - an individual service	10
For people with plenty of time/who live near a study centre (NB: semi-prompted)	10
For people having difficulties (who lack confidence) (NB: semi-prompted)	10
For people who like using computers/who like step-by-step learning/who are confident (NB: semi-prompted)	7
New and useful (and interactive) learning method	7
For people (on SDT286) without a biology/science background (NB: semi-prompted)	7
Corrects misunderstanding before proceeding. Keeps you on the right track.	5
Multimedia provides variety, makes you think in a different way	5
It's fun. For people who enjoy computers (NB: semi-prompted	5
Other	18

5a) Disadvantages of Cicero: not prompted in terms of specific points

	%
Availability snags/overbooked/inconvenient times	29
Uncertain whether will be able to master instructions/ typing/logging in	21
Travelling time to use	21
Booking procedure	15
I may not have the extra spare time to use it	13
A time-consuming learning method	11
Limitations of being a machine/mechanical annoyances	10
Machine breakdown	10
Telephone problems	5
Terminal environment (noise, stuffy)	4
May not be sufficient reward of time and effort	4
Other	5

5b) Disadvantages of Cicero: prompted

	%
I'm put off by the thought of dealing with a computer	12
I'm daunted by the complicated descriptions of Cicero in the course material	11
I dislike using typewriter keyboards	4

APPENDIX 3a

SDT286 Questionnaire Tutorial 1 (Interactive) - questions built into 1st tutorial

Q.1 What practical difficulties did you encounter?

Q.2 How many minutes has this session taken?

Q.3 Do you intend to use Cicero again?

Q.4 (If answer to Q.3 is NO) Why not?

Q.5 Why will you use Cicero again?

Q.6 In this tutorial you were asked to type in all the answers, then you were told how you had done concept by concept. How do you feel about this?

Q.7 Was giving your confidence rating helpful?

Q.8 (If answer to Q.7 is NO) Why wasn't it helpful?

Q.9 How did it help?

Q.10 Did you enjoy using Cicero?

Q.11 (If answer to Q.10 is NO) Why not?

Q.12 Why did you enjoy it?

APPENDIX 3b

0 1 S D T 2 8 6 X 7 9 (1-11)

(12) 1

Tutorial 1 (Postal)

SDT286 BIOLOGICAL BASES OF BEHAVIOUR

Student Report Form on CICERO

1. Please write in your student serial number ☐☐☐☐☐☐☐☐ (13-20)

2a) Please use this space to say why you used the postal version of Cicero instead of using Cicero at a study centre? (21) (22) (23) (24) (25) (26) (27) (28)

b) Would you have preferred to use the interactive (study centre) version? (29) (30) (31) (32)

(33)

3a) Do you intend to use Cicero again for your study of SDT286? Yes 1 / No 2

b) What are you reasons for your answer to Q.3a ? (34) (35) (36) (37) (38) (39) (40) (41) (42)

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4. In this tutorial we did not evaluate your answers in the order that you gave them. Instead we tried to respond concept by concept. How do you feel about this approach?

(43)
(44)
(45)
(46)
(47)
(48)
(49)
(50)
(51)
(52)

(53)

5a) Was giving your confidence rating helpful? Yes 1 No 2

b) Please give your reasons for your answer to Q.5a.

(54)
(55)
(56)
(57)
(58)
(59)
(60)
(61)
(62)

(63)

6a) Did you enjoy using Cicero? Yes 1 No 2

b) Please say why you have answered Q.6a as you have.

(64)
(65)
(66)
(67)
(68)
(69)
(70)
(71)
(72)
(73)
(74)
(75)
(76)
(77)
(78)
(79)
(80)

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Analysis of student attitudes to postal version of Cicero after first tutorial, 1979. (Based on 52 responses.)

SDT 286/CICERO POSTAL TUTORIAL NO 1 (1979)

Students who used the postal version of SDT 286 Cicero Tutorial No 1 were sent a short questionnaire seeking their reasons for using the postal version and their feelings about the tutorial. There were fifty-two responses. Students answers can be considered under three headings:

(i) Why did you use the postal version instead of the interactive version of Cicero? (QQ2a, 2b)

(ii) Did you enjoy using Cicero and will you use it again? (QQ3ab, 6ab)

(iii) How did you feel about specified aspects of the tutorial? (QQ4, 5ab)

1. Preference for postal versus interactive version

About two thirds of the 'postal' students would like to use the interactive version. It will be important to consider why they express this desire, but just why did they use the postal version on this occasion? By far the most frequent reason was the distance to the study centre terminal. The journey is time-consuming (as well as costing more than a 9p stamp for the postal version), and doubly so in cases where the student has to travel in person in advance to book a session; He/she has to travel to the centre to book a session, then travel there again a week or so later for the session itself. Distance, then, was the most common reason, or more accurately, time (and financial) expenditure in travelling. In several cases one Cicero tutorial would involve four or more hours travel time for the student.

Travelling time was the most common hindrance to using interactive Cicero but other time-related factors were mentioned in addition, each item by only a handful of students - the time it will take me to become adept at using the terminal; it's the time I wasted on a previous occasion when I failed to make useful contact with the computer; the time it can take to log in; the previous student overrunning his/her time and therefore reducing my time; the times when the terminal is available are inconvenient in my case; the time when I want to use it, e.g. Easter holidays, the terminal is closed; the time wasted in hunting for the caretaker who has the key. A further time factor is that the terminal is sometimes heavily booked-up and the student cannot predict whether he/she will be easily able to make the journey as far in the future as say, two weeks' time.

Most of our students work full-time, whether paid or not, and have limited spare time in which to study. In cases where interactive Cicero is time-consuming, usually because of distance from the terminal, it is not surprising that postal Cicero is the option selected.

Some students cite past negative experience with interactive Cicero as causing them to choose the postal version on this occasion - usually an experience of wasted time - but it is not my impression that this is a frequent reason. However, one needs to be sensitive in reading students' answers to the possibility that hearsay about the frustration/annoyance that can be encountered in trying to use interactive Cicero is helping to influence some in choosing the postal version. I sense that this is happening to some extent; however it is interrelated with a number of other 'psychological' factors and should be considered with them. Before going on to these more hidden factors which influence choice of interactive or postal Cicero there are two more practical points which should be mentioned. Just

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a few of the postal students mentioned the noise of the computer terminal and one mentioned the dirt of the room - not as main but as supporting reasons.

To move on then, to the more hidden or more psychological reasons influencing choice of interactive or postal Cicero, attractions first:

Q2a 'Why did you use the postal version of Cicero instead of using Cicero at a study centre?'

The postal version of Cicero was preferred largely because it was less time consuming. Students had chiefly in mind the travelling time and difficulties in reaching the study centre - the necessity of making a separate trip to the centre simply to book time instead of being able to book by telephone was again mentioned as a considerable drawback, particularly financially. Obtaining suitable computer time was another difficulty - several students were ready for the feedback over the Easter holidays when the study centre was closed. Some find the computer hours inconvenient and others say the terminals are booked for in advance and they are "not able to book computer time". Lastly there was the problem of time spent learning to use the computer - several felt it was better spent in regular study.

Family or personal reasons were also mentioned, e.g. illness and the difficulties of arranging baby-sitters and organizing the domestic situation. With a two-week waiting list for terminal time it is difficult to predict movements so far ahead.

The third category involves those who have tried the terminal and experienced off-putting difficulties. E.g. I tried terminal once; spent £2.50 travel expenses, wasted 4 hours, couldn't make useful contact in 2 hours. Several students ran out of time while using the terminal for a variety of reasons - the difficulty of getting in on heavily loaded computer lines, difficulties with logging in, and, frequently, other students overrunning their time into the next. In one case the terminal refused to accept the student's number; in another it kept giving an unwanted remedial tutorial; and in a third, it was broken altogether. There were several detailed complaints: the terminal room was noisy and dirty, the printout too faint and "Saturdays are a washout" because the caretaker has to be chased up for the key.

In short then, these students found the postal version far more convenient than the interactive version.

Q2b 'Would you have preferred to use the interactive (study centre) versions?'

Twenty-one answered with an unvarnished 'yes'*, thirteen with a qualified 'yes' (if study centre were nearer (7), if it wasn't so noisy, if logging-in weren't so time-consuming, if I were more adept at using it, etc), one said 'maybe', two found it difficult to say', twelve said 'no' (of whom two said that they had now changed from 'yes'), one did not understand the question and one did not answer it.

Overall then, two-thirds of the postal users would like to use interactive Cicero but in practice only perhaps 20% of the postal users actually will.

The two who had been converted from 'yes' to 'no' had been favourably surprised by the usefulness of postal Cicero. Another of the 'no's was a professional computer user who had no longer found any excitement in using a computer interactively.

* But studying their other answers closely one feels that only eight of the twenty-one will in practice try the interactive version. One feels uncertain in the case of a further four. I feel that the remaining nine will not try the interactive version, mainly because of time/distance/travel difficulties, but also because of domestic commitments (two) and negative previous interactive experience (two).

Q3a 'Do you intend to use Cicero again for your study of SDT 286?'

Yes - 31
No - 0

Q3b 'What are your reasons for your (Q3a) answer?'

The prime reason for the positive attitude to Cicero was the feedback it offers; consequently it was more valuable than CMAs. Cicero acts as an extra personal tutorial, particularly as the course has a shortage of tutorials and no CMA for the Cicero units. 'Not only does it tell me where I go wrong but also why.' The form can be filled in while doing the particular work and feedback is given when concepts are still fresh. It was particularly useful for pointing out gaps and weak areas and then for offering helpful comments. Many said the printout would be useful for revision.

The second reason was the general usefulness of the material - "the material sent was exactly what I hoped for". Three students found it made them more confident in their ability to master the course. It was a good method of learning the work and testing one's knowledge; if offered another means of course integration. It demanded more thought about the work because the questions called for a deeper fundamental knowledge of the subject.

Q4

Twenty-one students found the concept by concept approach very helpful. The most common remark was - a bit confusing at first, but soon grasped the idea. In the end they found it a more useful approach for study purposes, particularly for pointing out weak areas. It gave a better overall view and aided a logical assessment of results.

Seven students said it didn't make much difference.

Those against - approx. ten - found it confusing, muddly as paper has to be turned to and fro to check information. Several preferences were made: 1. that the questions be presented concept by concept, 2. that an answer by answer evaluation be made followed by a concept summary.

Q5a

confidence rating helpful - 27
" " not helpful - 22
" " no answer - 2

Q5a (cont.)

YES

There were basically two sorts of comments on this question. The most frequent involved the usefulness of the rating e.g. it made me check my answers more carefully before committing to paper. It was useful for revision and for pinpointing areas of further study. It was a good method of testing one's understanding.

The second type of comment centred on the rating as a confidence booster, e.g. "confidence improves performance". It was useful to see whether one's self-assessment was sound and gave a valuable warning of the error of over-confidence.

One student suggested the same method should be used with CMAs - penalise a confident wrong response more than a hesitant slightly wrong one.

Q5b

NO

Students who answered no to this question either found the confidence ratings unnecessary or actually undesirable. Those in the first category found that they merely point out the obvious if the answer is wrong, 'I need more work.' I either know I'm right or I'm guessing. It would only be useful if the questions were assessed, as proof of guessing. Several found they gave their ratings almost at random or that the ratings depended on the personality of the student. One student said that it did not make him rethink his original answer. Another had forgotten his individual confidence ratings by the time he came to fill in the Cicero form. In short they found it interesting but not particularly useful.

Those against the ratings found them irritating and anxiety producing. "Querying my confidence makes me doubt it". One student was "not happy" about confidence ratings and to another "confidence is irrelevant". It was "low" confidence when right which involved a third student in time-consuming remedial tutorials, leaving no time to finish questions.

Q6a

Yes -	46
No -	1
Yes & no -	2
No answer-	2

Q6b

Although a few students mention their enjoyment of Cicero, primarily they are interested in it as a learning experience - "it made me think more deeply about the material". Many specifically say that it is better than CMAs because it provides interactive assessment. Some enjoyed it because it was a different learning method. Although one found it a chance to go over the material without having to read it completely, another found it required more reading to answer the questions. In either case it reinforced learning and was a good opportunity for establishing a real grasp of the work.

For a few students its prime value is for revision and for pointing out incorrect answers. It provides good practice in answering questions.

Quick feedback is also a major drawing card of Cicero - "feedback motivates learning". To have feedback, even in 3 days, was well worth the effort. It offered an opportunity to test oneself without pressure, but with feedback.

Two other advantages were - learning by experience that computers are not as terrifying as they seem and having a target date to keep up with work.

Two disadvantages were - it pointed out how much was missed on first reading of the subject, and it becomes gimmicky when it starts saying 'well done' and 'try harder'.

The comment from the student who answered 'no' was - it necessitated going backwards and forwards through the printout, notes and set books trying to correlate CMA questions, own answers, correct answers and revision of weak points.

General Remarks

1. I would like to have Cicero give all the correct answers first, then ask me which questions I'd like help in.

2. Helpful if Cicero could give references - book and page, where the correct answers can be found.

3. If you must return the remedial packages, please make it possible to interrupt them.

4. Did not like the seemingly random question order, nor the absolute contrast of some clear-cut questions with other ambiguous ones.

from:
Robin Mason & Bob Wumphrey
SRD
IET, June 1979

APPENDIX 3D

Summary of answers to the 4 questionnaires given by interactive users

Tutorial on Units 3 and 4 N = 44

What practical difficulties did you encounter?

Problem	Frequency
Logging in	14
None	10
Computer speed too fast	3
Access	3
Accidentally gave "wrong" answer to remedial question and got 'caught'	2
Too verbose	1
Telephone key lost	1
Concepts not in logical order	1
Booking	1
GPO line	1
Rude comment from computer	1
System not logged-out	1

How many minutes has this session taken?

	Frequency of response
20 minutes	4
30 minutes	1
40 minutes	5
50 minutes	7
60 minutes	14
70 minutes	1
80 minutes	3
90 minutes	6
100 minutes	1
200 minutes	1
250 minutes	1

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Do you intend to use Cicero again?

25 said Yes - but didn't
2 said No - (there was no time)
15 said Yes - and did

Why will you use it again?

For feedback, like a CMA but better	11
Good remedial help	2
For revision	5
Helpful/useful	12
Self-assessment	3
Helped shed my reservations about working with computers	1
Taught me what I didn't know - helped me discover my errors	2
It's not assessed	1
Memory test and learning aid	1
Information	2

In this tutorial you were asked to type in all the answers, then you were told how you had done concept by concept. How do you feel about this?

Like it as it is: 26
Prefer answers after each question: 10

Was giving the confidence ratings helpful?

Yes - 23		No - 18	
'It was good'	2	'It was bad'	3
Related to the help	2	Confusing	1
More feedback	4	Irrelevant	8
Made me confident about confidence	6	Can't answer questions	1

Promotes thoughtfulness	6
Amusing	1
Liked to qualify the answer	1
Useful for tutor	1
Time-consuming	2
Unconnected to answer	3

Did you enjoy using Cicero?

Yes - 41

because...

Quick response	3
Playing with computer is fun	9
Gave me confidence	1
Novel	5
Good fun	10
Could do it on my own	2
Useful	5
I was involved	2
Could go at my pace	1
Satisfied a need	1
Unembarrassing	1
I'm a masochist	1

No - 3

Noisy	1
I can't cope	1
Time-consuming	1

Tutorial on Unit 9 N = 48 (Some of these got out of the program and therefore didn't answer many of the questions)

How many minutes did this session take you?

Minutes	Frequency	
10	2	
20	16	
30	12	
40	4	Not all respondents answered
50	1	
60	2	
70	1	

You were asked for a confidence rating for individual questions.

Did you find giving the confidence rating easy?

Yes (Easy)	No (Hard)
*	
and it took a few seconds: 17	took a few seconds : 7
and it took 30 seconds: 3	took 30 seconds : 3
and it took a few minutes: 6	took a few minutes : 3
	took several minutes : 5
	time not specified : 2

* How long did it take you to decide how confident you were?

Did Cicero make use of this information?

		Comments
Yes	31	Helpful
No	11	

(Most people believe it is used but don't know how.)

How could the information have been used best?

- by providing more help where confidence is low (2)
- best as it is (1)

Which of the following are true? *	Frequency of response
(A) I would rather be told I'm wrong by a computer than by a tutor	14
(B) I enjoy the anonymity of a Cicero session	30
(C) I dislike the anonymity of a Cicero session	6
(D) I dislike it when the computer adopts a chatty human style	8

* answers not mutually exclusive.

How would you describe Cicero to someone who knows nothing about a computer?

Summary of Description/concept	Frequency
Non-human question and answer supplier	6
Teaching machine	1
Understanding tutor	1
Talking machine	1
Passive	1
Big-headed typewriter	1
Interactive teaching	1
Knowledge testing device	1
Good diagnostic aid	1
A tutor without a face	1
Noisy	1
Daunting	1
Inhuman machine	1
Silly stupid typewriter	2
Wonderful	1
Telephone cum typewriter	1
Programmed instruction text	1
Easy to use for revision	3
Use of keyboard to answer questions	1
Difficult to log in to	1
Boring but useful	1

Sometimes, if you have taken a while to answer the program may come up with a prompt like: 'No answer in 120 secs, please wake up'.

Did this happen to you, and if so how did you feel about it?

Yes	and annoyed	9
Yes	and intimidated	1
Yes	and not annoyed	5
Yes	and woke up	1

Tutorial on Unit 12

Did you always read the WHOLE of the answers given to you in this tutorial?

Yes (read the whole of them) 14

No, (and no reason given)	2
No, because I got them correct	1
No, have no time, will later	3
No, prefer to read them at home	1
No, not enough time	1
No, printout too fast	1

In previous tutorials, after getting some wrong answers you were told to re-read part of the course material. Which of the following statements applies to you?

* A) I had no wrong answers
  B) I had some wrong answers but was not told to re-read material
  C) I was told to re-read material and did read some
  D) I was told to re-read material but did not read any
* (not mutually exclusive)

Option	Frequency of answer
A	1
B	8
C	14
D	1

(Many said they would use it (or had) for revision purposes.)

Unlike previous tutorials, you didn't have to type confidence ratings in. What are your views on this?

Comment	Frequency
Missed having confidence	1
Preferred it without	8
Not important	2

Do any of the following adjectives apply to the quality of feedback in this tutorial?

Adjective	Frequency
Boring	1
Patronising	1
Jargon laden	0
Simple	8
Concise	10
Wordy	1
Useful	19
Repetitive	1
Formal	1

How many minutes did this session take?

10	
20	7
30	9
40	
50	3
60	1
70	
120	1

Were the terms used in this tutorial consistent with those in the unit?

Yes - 17
No - -

Tutorial on Unit 15 N = 8

Did you have any problems logging in this time?

Yes 5

No 2

Did you find the answer form easy to use?

Yes 7

No 1

How many minutes has this session taken?

Minutes	Frequency
10	
20	1
30	3
40	1
50	2
60	1

Was it worth it?

Yes 6

Possibly 1

During the tutorial did you at any stage feel the need for:

More background information on the concept you were currently working on?	Yes 1 No 7
Advance notice of what questions or comments were coming next in the tutorial?	Yes 1 No 7
Did you feel that the concepts in the tutorial followed naturally one from the other?	Yes 6 No 2

How would you structure a Cicero tutorial?

Answer	Frequency
OK as it is	1
I wouldn't because I am too dumb and short of time	1
Don't understand	1
Similar to Cicero's	1
Answers should follow same order as questions	1
At this stage I feel the need for advance notice of what's coming next	1
As in tutorial	

APPENDIX 4a

CICERO TUTORIAL 2 INTERACTIVE QUESTIONNAIRE

[Q1a Do you want to see the instructions?]

Q1 How many minutes did this session take?

Q2 You were asked for a confidence rating for individual questions. Did you find giving the confidence rating easy? Yes or No

If Yes, Goto Q4

Q3 Why wasn't it easy ?

Q4 How long did it take you to decide how confident you were?

Q5 Do you feel Cicero made use of the information?

Yes or No

If Yes, Goto Q7

Q6 How could the information have been used best?

Q7 In what way was the confidence rating used?

Q8 Which of the following are true?

Type in as many letters as you like.

(A). I would rather be told I'm wrong by a computer than by a tutor.

(B). I enjoy the 'anonymity' of a Cicero session.

(C). I dislike the 'anonymity' of a Cicero session

(D). I dislike it when the computer adopts a chatty 'human' style.

Q9 How would you describe Cicero to someone who knows nothing about a computer.

Q10 Sometimes, if you have taken a while to answer, the program may have come up with a prompt like 'No answer in 120 secs please wake up'. Did this happen to you? YES/NO

IF YES, GOTO Q11

Q11 How did you feel about this?

APPENDIX 4b

0 1 5 D T T 2 7 9 (1-9)
(10)

SDT286 BIOLOGICAL BASES OF BEHAVIOUR

Cicero Tutorial No. 2

1. Please write in your student serial number [| | | | | | | |] (11-19)

To answer where codes are provided (e.g. Yes 1, No 2), please draw a ring around whichever code corresponds to your answer, for example, No (2).

2a) You were asked to give a confidence rating after answering individual questions. Did you find the confidence rating easy to give? (20)

Every time	1
Most times	2
Some times	3
Never	4

b) IF YOU DID NOT FIND IT EASY, EVERY TIME, MOST OR SOME OF THE TIME:

Please explain what the difficulty was. (21) (22) (23) (24) (25) (26)

3. How long did it take you to decide how confident you were? (27) (28) (29) (30) (31) (32)

4. Do you feel that Cicero made use of your confidence rating? (33)

Yes	1
No	2

Please comment: (34) (35) (36) (37) (38)

5. Do you agree with any of the following statements? Please ring the code for each one that you agree with.

i) I would rather be told I'm wrong by a computer than by a tutor 1 (39)

ii) I enjoy the 'anonymity' of a Cicero session 1 (40)

iii) I dislike the 'anonymity' of a Cicero session 1 (41)

iv) I dislike it when the computer adopts a chatty 'human' style 1 (42)

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PTO

6. How would you describe Cicero to someone who knows nothing about a computer?

7a) Sometimes, if you have taken a while to answer, the program may have come up with a prompt like 'No answer in 120 seconds. Please wake up'. Did this happen to you? *(43)*

Yes 1
No 2

b) IF THIS DID HAPPEN TO YOU:

How did you feel about it? *(44)* *(45)* *(46)* *(47)* *(48)* *(49)* *(50)*

8. OTHER COMMENTS

Please use this space if you would like to make other comments about Cicero tutorials.

APPENDIX 4c

Summary of replies to Questionnaire about Postal tutorial 2 (Unit 12)

N = 22

Question

2a) You were asked to give a confidence rating after answering individual questions. Did you find the confidence rating easy to give?

	Frequency of response
Every time	-
Most times	13
Some times	9
Never	-

2b) (Comments on 2a))

The more one thinks, the less confident one gets (1)

Difficulty giving confidence is related to speed of finding the material in the unit (4)

The act of making confidence public and thinking about it makes you less confident (2)

3. How long did it take you to decide how confident you were?

	(frequency)	Comments
Few seconds	11	(Dependent on knowledge)
30 seconds	1	
Few minutes	5	
Several minutes	4	

4. Do you feel Cicero made use of your confidence rating?

Yes = 19 Comments

But not useful
May reflect questions' ambiguity
I don't know how certain I am.

No = 3 Comments

Failed to make correct estimate of confidence

5. Do you agree with any of the following statements?

		Frequency of response
i)	I would rather be told I'm wrong by a computer than by a tutor	4
ii)	I enjoy the 'anonymity' of a Cicero session	10
iii)	I dislike the 'anonymity' of a Cicero session	4
iv)	I dislike it when the computer adopts a 'human' style	4

6. How would you describe Cicero to someone who knows nothing about a computer?

- Machine answering service (1)
- Typewriter (1)
- Assists in understanding (1)
- Postal is not like using a computer (1)
- Questions are easy to follow (1)
- Useful means of revision (1)
- Thinking typewriter/TV screen (1)
- Instant feedback/CMA (2)
- Programmed learning (1)
- Checking knowledge is correct (3)
- Analysing problems and explaining difficulty (1)
- A machine programmed to correct multi-choice papers (3)
- Postal tutorial (1)
- Attempt to replace human tutor (1)
- Useful (2)

7. Other comments

- Would like a CMA grade

CMAs are not fun therefore neither is Cicero

Mechanics of interactive (tutorial) difficult

Felt on-spot using the interactive version when told to 'wake up'

I enjoyed the relaxed nature of the postal service

Don't like the 'anthropomorphism' of Cicero!

Had booking problems with interactive version

I had a bad experience at the terminal, it was nerve-racking

Good teaching aid

Didn't have sufficient time to use it

Useful (3)

APPENDIX 5a - Questions built into 3rd tutorial

Q1. Did you always read the WHOLE of the answers given to you? (Just yes or no here)

Q2. (If No to Q1) Why not?

Q3. In previous tutorials, if you got some wrong answers you were sometimes told to re-read part of the course material. Which of the following statements applies to you:

A I had no wrong answers

B I had some wrong answers but was not told to re-read material

C I was told to re-read material and did read some

D I was told to re-read material but did not read any.

Q4. Please comment on your answer to Q3.

Q5. Unlike previous tutorials, you didn't have to type confidence ratings in. What are your views on this?

Q6. Do any of the following adjectives apply to the quality of feedback in this tutorial? If so, type in the appropriate letters.

A Boring
B Patronising
C Jargon laden
D Simple
E Concise
F Wordy
G Useful
H Repetitive
I Formal

Q7. How many minutes did this session take?

Q8. Were the terms used in this tutorial consistent with those in the unit?

APPENDIX 5b

0 1 S D T T 3 7 9 (1-9)

(10) 1

SDT286 BIOLOGICAL BASES OF BEHAVIOUR
Cicero Tutorial No 3

1. Please write in your student serial number [| | | | | | |] (11-19)

To answer where codes are provided (e.g. Yes 1, No 2) please draw a ring around whichever code corresponds to your answer, for example, No (2).

(20)

2a) Did you always read the whole of the answers given to you?

Always	1	→ *Skip to Q.3*
Sometimes	2	
Usually	3	→ *Please answer*
Once or twice	4	*Q.2b)*
Never	5	

b) Please say why you did not always read the whole of the answers.

3a) In previous tutorials, if you got some wrong answers you were sometimes told to re-read part of the course material. Which of the following statements applies to you?

(21)

I had no wrong answers	1	
I had some wrong answers but was not told to re-read material	2	
I was told to re-read material and I did read it all	3	
I was told to re-read material and did read some	4	→ *Please answer answer*
I was told to re-read material but did not read any	5	→ *Q.3b)*

b) Please say why you did not re-read all the relevant material.

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4. Unlike the previous tutorials, you did not have to give confidence ratings this time. How do you feel about this?

5. Do any of the following adjectives apply to the quality of feedback in this tutorial? Please ring codes(s) for any that apply.

	A little	Very	
Boring	1	2	(22)
Patronising	1	2	(23)
Jargon-Laden	1	2	(24)
Simple	1	2	(25)
Concise	1	2	(26)
Wordy	1	2	(27)
Useful	1	2	(28)
Repetitive	1	2	(29)
Formal	1	2	(30)

(31)

6. Were the terms used in this tutorial consistent with those in the unit?

Entirely	1
Mostly	2
Partly	3
Not at all	4

7. OTHER COMMENTS

Please use this space if you would like to make other comments about this tutorial.

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APPENDIX 5c

Summary of replies to questionnaire about postal tutorial 3 (unit 12).

(N=17)

2a) Did you always read the whole of the answers given to you?

Frequency of response	
17 - Always	} Skip to Q3
4 - Sometimes	}
1 - Usually	} Please answer Q2b)
1 - Once or twice	}
Never	}

2b) Please say why you did not always read the whole of the answers.

If I got them right, I stopped reading (5).

3a) In previous tutorials, if you got some wrong answers you were sometimes told to re-read part of the course material. Which of the following statements applies to you?

	Frequency of response	
I had no wrong answers	1	
I had some wrong answers but was not told to re-read material	3	
I was told to re-read material and I did read it all	8	
I was told to re-read material and did read some	9)	Please answer Q3b)
I was told to re-read material but did not read any	4)	

3b) Please say why you did not re-read all the relevant material.

Time/overloaded	(4)
I'm going to wait and use it for revision	(5)

4. Unlike the previous tutorials, you did not have to give confidence ratings this time. How do you feel about this?

Very Positive	Positive	Neutral	Negative
6	4	2	3

5. Do any of the following adjectives apply to the quality of feedback in this tutorial? Please ring code(s) for any that apply.

	A little	Very	(Frequency of response in brackets)
Boring	(1)		
Patronising	(1)		
Jargon-laden			
Simple	(2)	(1)	
Concise	(2)	(10)	
Wordy			
Useful	(3)	(10)	
Repetitive	(1)		
Formal	(1)		

6. Were the terms used in this tutorial consistent with those in the unit?

Entirely (6)
Mostly (11)
Partly
Not at all

7. OTHER COMMENTS

View as useful, more informative CMA (1)
Useful for revision (2)
Lacking detailed information (1)
More individual routing wanted (1)
Not enough questions in course (1)
(Generally positive - (5))
Easier to follow than units
Helps clear up confusing points (1)
Want list of correct answers at a glance (2)
Refreshing and unrepetitive (1)

APPENDIX 6a

SDT286 Questionnaire Tutorial 4 Interactiv

1. Did you have any problems logging on this time?

2. Did you find the answer form easy to use:

   A When filling in the form?

   YES/NO If NO, what was the problem? Please comment.

   B When typing the answers from the form into the computer?

   YES/NO If NO, please comment.

3. How many minutes has this session taken?

4. Was it worth it?

5. During the tutorial, did you at any stage feel the need for

   A More background information on the concept you were currently working on? YES/NO

   B Advance notice of what questions or comments were coming next in the tutorial? YES/NO

   Please comment on your answers.

6. Did you feel that the concepts in the tutorial followed naturally one from the other? YES/NO

7. How would you structure a Cicero tutorial?

8. You were told Cicero would give you 'immediate' feedback. Did it?

APPENDIX 6b

Postal version of tutorial 4 questionnaire

1. Did you find the answer form easy to use?

2. Please comment on your answer to Q.1

3. Was the time spent filling in your answer form and reading the printout time well spent?

4. Whilst reading your printout, did you at any stage feel the need for more background information on the concepts? YES/NO

   Please comment on your answer .

5. Did you feel that the concepts in the tutorial followed naturally one from the other? YES/NO

6. How would you structure a Cicero tutorial.

7. You were told Cicero would give you 'immediate' feedback. Did it?

APPENDIX 6c

Summary of replies to questionnaire about postal tutorial no.4, Unit 15.
(N=12)*

2a) Did you find the answer form easy to use?

Very Easy	Fairly Easy	Very Hard	Fairly Hard
4	2	4	

3. Was the time spent filling in your answer form and reading the printout time well spent?

YES - 10 NO - 0

4. Whilst reading your printout, did you at any stage feel the need for more background information on the concepts?

YES - 7 NO - 5

5. Did you feel that the concepts in the tutorial followed naturally from one to the other?

YES - 6 NO - 5
(1 not sure)

6. How would you structure a Cicero tutorial?

- Recap at beginning
- Give overall score
- Make it same order as unit

7. Did Cicero give you immediate feedback?

YES - 10 NO - 0

* Not everyone answered each question.

APPENDIX 7

1969 10 1979

THE OPEN UNIVERSITY

The Open University,
Institute of Educational Technology,
Walton Hall,
Milton Keynes,
MK7 6AA.
Telephone: Milton Keynes 74066
Direct Line:

INSTITUTE OF
EDUCATIONAL TECHNOLOGY

Dear Tutor,

This year we are carrying out a study on the use (and usefulness) of the CICERO component of your course. Students have been asked to help us by completing:

An initial questionnaire, a short questionnaire each time they use (if they use) CICERO material and a final questionnaire. We would be grateful if you would also assist us by completing the enclosed questionnaire. Your answer will be used in the production of the final questionnaire - please feel free to report subjective attitudes towards and ancedotes about CICERO use.

The use of this sort of facility depends greatly on tutors' attitudes and advice, and so we are anxious to know what you feel to be the weak and strong points of the CICERO system. As you know, SDT286 is being replaced in 1981 by a new course, which will have a CICERO component. The results of this study will be sent to the course team, all tutors, the CICERO group in SCS, course teams considering using CICERO, relevant OU committees.

Thank you for you help.

Tim O'Shea

Ann Jones

Tim O'Shea (IET) Milton Keynes 63546/63779

Ann Jones (SCS) Milton Keynes 63330

APPENDIX 7

SDT286 BIOLOGICAL BASES OF BEHAVIOUR

Tutor Report Form (June 1979)

1. How much OU tutoring experience have you? Please write in below:

a) How many different OU courses you have tutored: .....

b) How many years you have been an OU tutor: .....

2. What sorts of students would you advise to use Cicero?

3. What do you feel to be Cicero's strong points?

4. What are Cicero's weak points?

5a) How do you advise your students to use the Cicero system? *Tick in box.*

Interactively only	☐
By post only	☐
Either interactively or by post	☐
Neither	☐
Other	☐

b) Please comment on your answer to Q.5a)

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6. What proportion of your current students use Cicero (whether postally or interactively)?

- All of them ☐
- Most of them ☐
- About half ☐
- About one-third ☐
- Very few ☐
- I don't know ☐

Please comment:

7. How were you introduced to the use of Cicero (e.g. computer briefing etc.)?

8a) Do you work through Cicero, talk about it or use it in any way in tutorials?

- Yes ☐ → *Q.8b)*
- No ☐ → *Q.8c)*

b) In what ways do you use it?

c) Please say why you do not use it in any way.

9. What effect does Cicero have on your job as a tutor?

- No effect ☐
- Makes it easier ☐
- Makes it harder ☐

10. What do you feel is the prevailing attitude among tutors to Cicero?

APPENDIX 7b

Summary of replies to 'tutor' questionnaire

37 replies received.

Q1. The relationship between experience and attitudes towards Cicero, if any, was not investigated.

Q2. To the question "What sort of students would you advise to use Cicero?" (Q2) there were many different answers. The largest category (25, 68%) said 'ALL'. Some tutors emphasized 'weaker' students: 'non-scientists', 'students wanting more feedback', 'worried', 'isolated' (all these comments made by only 1 or 2 tutors); others stressed the 'better' students: 'competent', 'scientifically sophisticated', 'individual learners', and one said 'none'.

Q3. "What do you feel to be Cicero's strong points?"

The most frequent answer (17, 46%) was 'immediate feedback', followed by 'self-pacing' (5, 14%) 'self-assessment' (4, 11%) 'a fresh learning situation (3, 8%), 'embarrassed students can use' (3, 8%), 'tutorial nature' (2).
Other answers were:
'Good exposure of individual misconceptions', 'easy to use', 'continuous access', 'reassurance', 'flexibility', 'range of questions' 'students enjoy it', 'revision', 'interaction'

Q4. "What are Cicero's weak points?"

The most frequent answer was 'too rigid' (7,19%). Practical reasons were also emphasized and included: travel (2), time (2), booking (2), access (3), slow (3), machine breaks (1).

There was some belief in assessment and also that students were afraid of using a computer (3). Centering more around the content, this was felt to be 'too limited' (2), dealing with facts not arguments (1), too specific - and sometimes faulty.

Another response was the amount of time it takes generally, (2) - and more specifically the time taken to learn to use (1), too wordy (4), too much paper (1) and a poor ratio of effort to returns (1).

Taking Q3 and 4 together, it appears that there is wide variance in the perception of such a system's strengths and weaknesses. The system is praised for its flexibility, range of questions, continuous access, etc., and criticised for its rigidity, for being too limited and difficulty of access.

Q5. "How do you advise students to use the Cicero system?"

Interactively only	14 (38%)
By post only	0
Either interactively or by post	19 (51%)
Neither	4
Other	1

(Note that nobody advised their students to use the postal service only - even though this is less time-consuming and time is the major reason given for not using.)

Q5b Comments on Q5 include:

The interactive version is best (8,22%)
Only useful interactively (2)
Up to students
It's seen as marginal

Q6. "What proportion of your current students use Cicero (P or I)?"

All	-
Most	5
About half	9
About ¼	4
Very few	8
Don't know	10 (27%)

Most don't know in fact.

Q7. Of those who answered, most tutors had a computer briefing (27,73%), 3 were self-taught and 4 received no introduction to Cicero.

8a) 11 tutors said they used Cicero in some way in tutorials (30%), 20 tutors said they didn't (54%).

b) Of those who did these were the sorts of uses.
'Discussion', 'check on grasp', 'talks', 'as a reminder', 'relate to tutorials 'in conjunction with CMAs', 'revision', 'initial briefing' 'to expose particular theoretical difficulties'.

c) Most 'non-users' gave time as the reason. (8,22%). Other reasons were: 'inconvenience', 'never thought of it', 'it's self-contained', 'students have enough to do'.

9. 23 tutors felt Cicero had no effect on their job (62%) and 7 thought it made it easier (27%).

10. "What do you feel is the prevailing attitude among tutors to Cicero?"

There was little agreement on this question. 6 said they didn't know.
Other answers were: 'completely separate from tutorials'(3)
'unfavourable' (2)
'passive toleration' (1)
'positive but cautious' (1)
'unreliable'
'students are scared'
'the back-up is useful'
'good but time-consuming'
'students find it useful'
'students use as tutorial substitute'.

O I S D T C I C F 7 9 (1-11)

SDT286 BIOLOGICAL BASES OF BEHAVIOUR (12) 1

Report Form on 'Cicero'

1. Please write in your student serial number: ☐☐☐☐☐☐☐☐ (13-20)

2. Please draw a ring around the code (1) for each of the following Cicero tutorials that you used this year. All but the last refer to SDT286.

	ring code if you used tutorial	
Postal 1 (Units 3 and 4)	1	(21)
Computer Terminal at Study Centre 1 (Units 3 and 4)	1	(22)
Postal 2 (Unit 9)	1	(23)
Computer Terminal at Study Centre 2 (Unit 9)	1	(24)
Postal 3 (Unit 12)	1	(25)
Computer Terminal at Study Centre 3 (Unit 12)	1	(26)
Postal 4 (Unit 15)	1	(27)
Computer terminal at Study Centre 4 (Unit 15)	1	(28)
Cicero tutorials on other courses	1	(29)

(30)

3a) Do you intend to make future use of Cicero (on courses where it is available)?

Yes definitely	1
Probably	2
Possibly	3
Hard to say	4
No definitely	5

IF YOU EXPECT TO USE CICERO IN FUTURE:

b) In what way do you expect it to help in your studies?

4. Students who don't use Cicero often quote a frustrating or annoying past experience with a computer as their reason for not using Cicero. Can you cite any examples of this that have happened to you or to other students?

5. Is there any particular sort of student who you feel would gain particular benefit from using Cicero?

6. If you were provided with a home computer terminal, would you use Cicero?

7. When we talked to students at summer school many said they were:

a) scared of using the terminal ..... (31)

b) embarrased at using it in front of other students ..... (32)

c) afraid of answers being used for assessment purposes .... (33)

How true are these views for you personally
Please write a number in each box above using a scale from 0-9 where
0 = not true at all for me personally
9 = very true for me personally

8. Our records show that many students who use Cicero early on in the course, do not make use of all the Cicero tutorials. Why do you think this is?

9. If you didn't use Cicero at all, why was this, bearing in mind that the postal version of Cicero takes only about 45 minutes to complete.

10. Please use this space for any other comments on Cicero:

PLEASE RETURN THIS COMPLETED FORM AS SOON AS POSSIBLE IN THE PREPAID ENVELOPE TO THE SURVEY RESEARCH DEPARTMENT AT WALTON HALL

TO/BW/JG/SRD © The Open University 1979

List of Technical Reports

These reports may be obtained from:-

Ann Jones, Institute of Educational Technology, The Open University, Walton Hall, MILTON KEYNES, MK7 6AA, England.

Report No.	Title and Author
1	M.A. Bramer (1980) Using Computers in Distance Education: The first ten years of the British Open University.
3	M.A. Bramer (1980) COMAL-80 - Adding Structure to BASIC.
4	A. Jones (1980) An evaluation of the SOLO programming language: A pilot study of its use at summer school.
5	A. Jones, T. O'Shea (1981) An evaluation of tutorial CAL at the Open University: the use of Cicero in SDT286.
6	E.L. Whitelegg (1981) An evaluation of tutorial CAL at the Open University: the use of MERLIN in ST291.
7	M.W. Lewis (1980) Improving SOLO's User-Interface: An Empirical study of user behaviour and a proposal for cost-effective enhancements to SOLO.
8	A.T. Vincent (1980) Some applications of a microcomputer.
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